2017 Spring Electrofishing (SEII) Summary Report

Cloverleaf Chain of Lakes (WBIC 299000)

Shawano County

Introduction and Survey Objectives

In 2017, the Department of Natural Resources conducted a one night electrofishing survey of the Cloverleaf Chain of Lakes in order to provide insight and direction for the future fisheries management of this water body. Primary sampling objectives of this survey are to characterize species composition, relative abundance, and size structure. The following report is a brief summary of that survey, the general status of the fish populations and future management options for the Cloverleaf Chain of Lakes.

Acres: 316 Shoreline Miles: 5.15 Maximum Depth (feet): 52
Lake Type: Deep Headwater Public Access: Two Public Boat Launches
Regulations: 25 panfish of any size may be kept, except 5 or fewer can be bluegill and pumpkinseed over 7". All other species statewide default regulations.

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Survey Information							
Site location	Survey Date	Water Temperature (°F)	Target Species	Total Miles Shocked	Number of Stations	Gear	Number of Netters
Cloverleaf Chain	5/18/2017	61	All	4.23	5	Boomshocker	2

Survey Method

- The Cloverleaf Chain of Lakes was sampled according to spring electrofishing (SEII) protocols as outlined in the statewide lake assessment plan. The primary objective for this sampling period was to count and measure adult largemouth bass and panfish. Other gamefish may be sampled but are considered by-catch as part of this survey.
- The entire shoreline of Grass and Pine Lakes was sampled with a boomshocker. All fish captured were identified to species and gamefish and panfish were measured for length. All gamefish were weighed as a part of this survey.
- Fish metrics used to describe fish populations include proportional stock density, catch per unit effort, and length frequency distributions.

Fish Metric Descriptions
PSD, CPUE, and LFD

Proportional Stock Density (PSD) is an index used to describe size structure of fish populations. It is calculated by dividing the number of quality size fish by the number of stock size fish for a given species. PSD values between 40 - 60 generally describe a balanced fish population.

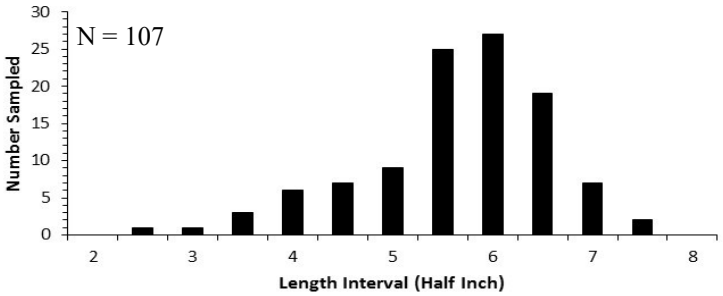
Catch per unit effort (CPUE) is an index used to measure fish population relative abundance, which simply refers to the number of fish captured per unit of distance or time. For electrofishing surveys, we typically quantify CPUE by the number and size of fish per mile of shoreline. CPUE indexes are compared to statewide data by percentiles. For example, if a CPUE is in the 90th percentile, it is higher than 90% of the other CPUEs in the state.

Length frequency distribution (LFD) is a graphical representation of the number or percentage of fish captured by half inch or one inch size intervals. Smaller fish (or younger age classes) may not always be represented in the length frequency due to different habitat usage or sampling gear limitations.

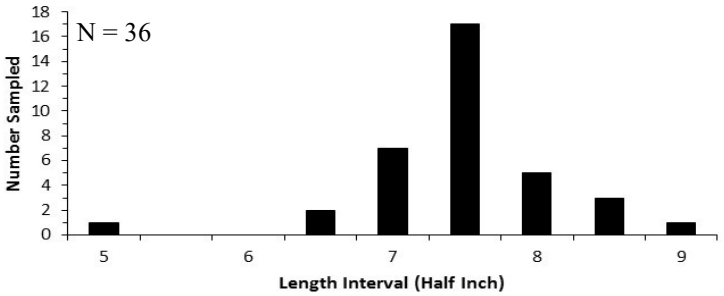
Size Structure Metrics									
Species	Total	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
BLUEGILL	107	5.9	2.5 - 7.6	3.0 and 6.0	106	55	52	79	High
PUMPKINSEED	17	6.1	4.8 - 7.6	3.0 and 6.0	17	9	53	79	High
BLACK CRAPPIE	36	7.7	5.4 - 9.3	5.0 and 8.0	36	9	25	41	Moderate
WALLEYE	35	12.0	10.5 - 16.7	10.0 and 15.0	35	2	6	20	Low
LARGEMOUTH BASS	174	10.5	4.1 - 16.4	8.0 and 12.0	121	73	60	60	Moderate
NORTHERN PIKE	19	15.3	9.7 - 21.2	14.0 and 21.0	11	1	9	13	Low

Abundance Metrics							
Species	CPUE Total (number per mile)	Percentile Rank	Overall Abundance Rating	Length Index (inches)	Length Index CPUE	Length Index Percentile Rank	Length Index Abundance Rating
BLUEGILL	107	56	Moderate	≥ 7.0 inches	9.0	59	Moderate
PUMPKINSEED	17	73	High	≥ 7.0 inches	3.0	84	High
BLACK CRAPPIE	36	87	High	≥ 10.0 inches	0	0	Low
WALLEYE	8.3	46	Moderate	≥ 18.0 inches	0	0	Low
LARGEMOUTH BASS	41.1	81	High	≥ 14.0 inches	5.0	67	Moderate– High
NORTHERN PIKE	4.5	83	High	≥ 26.0 inches	0	0	Low

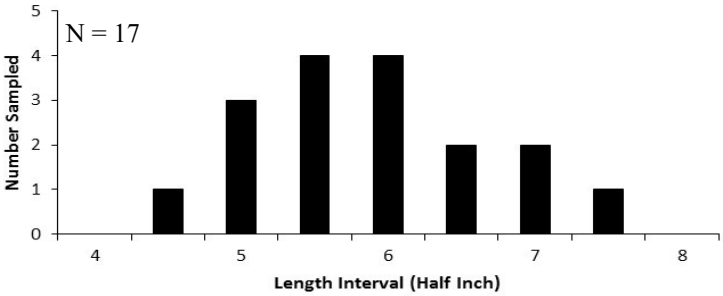
Bluegill Length Frequency



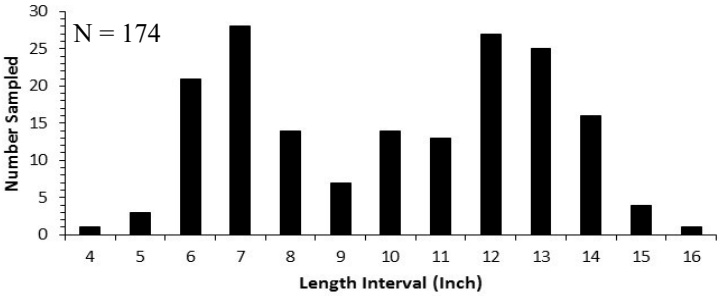
Black Crappie Length Frequency



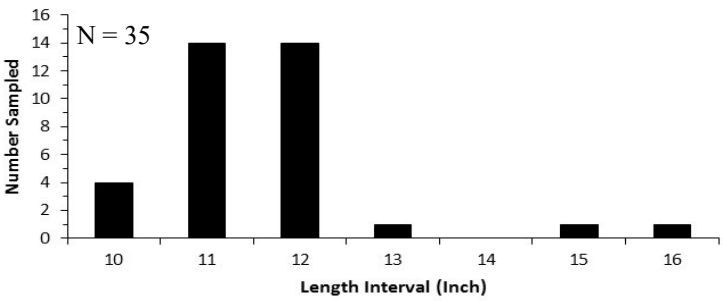
Pumpkinseed Length Frequency



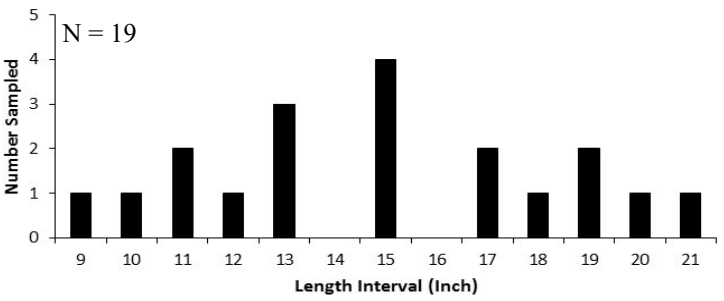
Largemouth Bass Length Frequency



Walleye Length Frequency



Northern Pike Length Frequency



Stocking History

Waterbody Name	Year	Species	Age Class	Number Stocked	Average Length (Inches)
CLOVERLEAF CHAIN	2017	WALLEYE	LARGE FINGERLING	3,172	3.3
CLOVERLEAF CHAIN	2017	NORTHERN PIKE	LARGE FINGERLING	900	8.5
CLOVERLEAF CHAIN	2017	MUSKELLUNGE	LARGE FINGERLING	316	12.0
CLOVERLEAF CHAIN	2015	WALLEYE	LARGE FINGERLING	3,184	7.8
CLOVERLEAF CHAIN	2015	WALLEYE	LARGE FINGERLING	2,100	7.0
CLOVERLEAF CHAIN	2014	NORTHERN PIKE	LARGE FINGERLING	796	9.5
CLOVERLEAF CHAIN	2014	MUSKELLUNGE	LARGE FINGERLING	316	9.8
CLOVERLEAF CHAIN	2013	WALLEYE	LARGE FINGERLING	6,338	6.8
CLOVERLEAF CHAIN	2010	MUSKELLUNGE	LARGE FINGERLING	193	13.2
CLOVERLEAF CHAIN	2008	MUSKELLUNGE	LARGE FINGERLING	640	10.3
CLOVERLEAF CHAIN	2008	WALLEYE	SMALL FINGERLING	11,290	1.5
CLOVERLEAF CHAIN	2006	MUSKELLUNGE	LARGE FINGERLING	140	10.8
CLOVERLEAF CHAIN	2006	MUSKELLUNGE	LARGE FINGERLING	200	13.0
CLOVERLEAF CHAIN	2006	WALLEYE	SMALL FINGERLING	15,985	1.4
CLOVERLEAF CHAIN	2004	MUSKELLUINGE	LARGE FINGERLING	638	10.5

Stocking History Continued					
Waterbody Name	**Year**	**Species**	**Age Class**	**Number Stocked**	**Average Length (Inches)**
CLOVERLEAF CHAIN	2004	WALLEYE	SMALL FINGERLING	15,990	1.4
CLOVERLEAF CHAIN	2002	MUSKELLUNGE	LARGE FINGERLING	640	10.1
CLOVERLEAF CHAIN	2002	WALLEYE	LARGE FINGERLING	1,150	6.0
CLOVERLEAF CHAIN	2000	MUSKELLUNGE	LARGE FINGERLING	450	11.4
CLOVERLEAF CHAIN	2000	WALLEYE	SMALL FINGERLING	11,000	1.7
CLOVERLEAF CHAIN	1998	WALLEYE	SMALL FINGERLING	8,850	1.7
CLOVERLEAF CHAIN	1997	WALLEYE	SMALL FINGERLING	11,000	2.7
CLOVERLEAF CHAIN	1997	YELLOW PERCH	FINGERLING	3,000	5.0
CLOVERLEAF CHAIN	1996	WALLEYE	FINGERLING	14,954	1.6
CLOVERLEAF CHAIN	1995	MUSKELLUNGE	LARGE FINGERLING	200	14.0
CLOVERLEAF CHAIN	1994	WALLEYE	FINGERLING	16,303	3.6
CLOVERLEAF CHAIN	1992	MUSKELLUNGE	FINGERLING	646	11.0
CLOVERLEAF CHAIN	1992	WALLEYE	FINGERLING	8,120	3.0
CLOVERLEAF CHAIN	1991	MUSKELLUNGE	FINGERLING	640	10.9
CLOVERLEAF CHAIN	1989	WALLEYE	YEARLING	4,500	10.0
CLOVERLEAF CHAIN	1989	MUSKELLUNGE	FINGERLING	640	11.0
CLOVERLEAF CHAIN	1989	NORTHERN PIKE	LARGE FINGERLING	325	11.0
CLOVERLEAF CHAIN	1989	YELLOW PERCH	LARGE FINGERLING	300	5.5

Summary

- A total of 463 fish from 13 species were collected during our survey. The most frequently encountered and common species were largemouth bass (174), bluegill (107), rock bass (56), and black crappie (36).
- Other fish species encountered in lower abundances included walleyes (35), northern pike (19), pumpkinseed (17), yellow bullhead (9), yellow perch (4), brown bullhead (2), common carp (2), bluntnose minnow (1), and bowfin (1).
- Two common carp, an invasive species, were encountered during our survey.
- Largemouth bass were the dominant gamefish captured in our survey. Densities were found at high levels whereas size structure was found at moderate levels. We averaged 5.0 legal size (≥ 14.0 inches) per mile of shoreline, which was moderate-high compared to other lakes throughout WI. However, only five largemouth bass > 15 inches and one > 16 inches were captured.
- Nineteen northern pike were captured. However, fyke netting would be a more appropriate sampling technique to assess the northern pike population. A fyke net survey was conducted in spring 2017. A separate report was written for the fyke net survey.
- Panfish populations were comprised primarily of bluegill, black crappie, and pumpkinseed. Densities and size structure of all three species were found at moderate to high levels.
- Bluegill and pumpkinseed populations were dominated by individuals between 5 - 7 inches that should grow to be desirable size in the next year or two.
- The black crappie population has a strong year class of individuals between 7 - 8.5 inches that will be reaching harvestable size in the next year or two.
- Four yellow perch were captured, but only one was > 8 inches.
- Survey results showed that the Cloverleaf Chain has a good population of rock bass. Fifty six rock bass per mile of shoreline were captured during our electrofishing survey. Many of the captured rock bass were harvestable size, averaging 6.5 inches with the biggest being 9.8 inches.

Management Recommendations

This survey was primarily intended to assess largemouth bass and panfish populations. Other species are captured but different survey techniques are typically used to better assess their population metrics. Therefore, management recommendations are focused on bass and panfish.

Largemouth Bass

- Despite having a PSD of 60 and averaging 5.0 largemouth bass ≥ 14 inches per mile of electrofishing, only one bass > 16 inches was captured. This is likely due to the high bass density resulting in slow growth rates in combination with anglers harvesting some of the legal size bass. Results from the last comprehensive survey in 2013 also showed a higher density of largemouth bass in the Cloverleaf Chain and slower growth. Efforts should be made to promote good largemouth bass habitat including adding coarse woody habitat along the shoreline, promoting native submergent and emergent vegetation, and enhancing natural shoreland areas.

Panfish

- The special panfish regulation limiting harvest to five or fewer bluegill and pumpkinseed >7” was put in place in 2016. Only nine bluegills and three pumpkinseed ≥ 7.0 inches were captured with electrofishing. No bluegills or pumpkinseed ≥ 8.0 inches were captured with electrofishing and only two bluegills ≥ 8.0 inches were captured in fyke nets. Given that only one year had passed since the regulation was put in place, it is not surprising that a significant number of large bluegills and pumpkinseed were captured. The next comprehensive survey in 2021 will provide more comprehensive information on the effect of the regulation.

Other Management Objectives

- The majority of the shoreline around the Cloverleaf Chain, except the island, is highly developed with little woody habitat. Landowners should consider adding fish sticks similar to those that were added around the island in 2016 to increase near-shore habitat for fish. Additionally, a large-scale deepwater fish sticks project could be considered to add habitat complexity to the Cloverleaf Chain.
- Walleye stocking will be necessary to maintain a walleye fishery in the future.